

CLAIMS

1. An immunoassay for detecting the presence of a water-sparingly-soluble/hardly extractable protein in a sample, comprising the steps of:

(1) extracting and/or solubilizing a water-sparingly-soluble/hardly extractable protein in a sample with an aqueous solvent containing an ionic surfactant,

(2) adding an antibody obtained by using the water-sparingly-soluble/hardly extractable protein as immunogen denatured previously with the ionic surfactant used in step (1) to:

a) the protein solution obtained in the step (1) above without substantially diluting the solution, or

b) a dilution wherein the protein solution obtained in the step (1) above is diluted in such a range that the concentration of the ionic surfactant is not reduced to 0.03% (W/V) or less, whereby an antigen-antibody complex between the water-sparingly-soluble/hardly extractable protein and the antibody is formed, and

(3) detecting the formed antigen-antibody complex.

2. The assay according to claim 1, wherein the concentration of the ionic surfactant in the aqueous solvent in step (1) is higher than 0.3% (W/V).

3. The assay according to claim 1 or 2, wherein the formation of the antigen-antibody complex in step (2) is carried out in the presence of the ionic surfactant at a concentration of higher

than 0.3% (W/V).

4. The assay according to any one of claims 1 to 3, wherein the ionic surfactant is selected from the group consisting of sodium dodecyl sulfate, lithium dodecyl sulfate, sodium lauryl sarcosine, hexadecyltrimethyl ammonium bromide, hexadecyltrimethyl ammonium chloride, hexadecyl pyridinium chloride and a mixture thereof.

5. The assay according to claim 4, wherein the ionic surfactant is sodium dodecyl sulfate.

6. The assay according to any one of claims 1 to 5, wherein the aqueous solvent in step (1) further comprises a reducing agent.

7. The assay according to claim 6, wherein the reducing agent is 2-mercaptoethanol, dithiothreitol or a mixture thereof.

8. The assay according to claim 7, wherein the aqueous solvent in step (1) comprises 1% (W/V) sodium dodecyl sulfate and 1M 2-mercaptoethanol.

9. The assay according to any one of claims 1 to 8, wherein in step (1), the protein solution is further boiled.

10. The assay according to claim 9, wherein the boiling is continued at least at 80°C for 5 minutes.

11. The assay according to any one of claims 1 to 10, wherein the protein is selected from the group consisting of ovalbumin, ovomucoid, casein, β -lactoglobulin, buckwheat protein, wheat protein and peanut protein which are in a hardly extractable state.